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Docket No.: 27-006

PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of: Virgil Cotoco Ararao et al. : Confirmation No.: 6546
Serial No.: 10/721,916 : Art Unit: 2813
Filed: 11/24/2003 : Examiner: Thanh T. Nguyen
For: FABRICATION METHOD :
FOR SEMICONDUCTOR
PACKAGE HEAT
SPREADERS

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Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

REPLY BRIEF

Sir/Madam:

The following Reply Brief is submitted in response to the Examiner's Answer mailed October 30, 2007.

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Vickie Ishimaru

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(I) Reply Arguments

Issue #1:

Claims 1-10 and 21-30 are improperly rejected under 35 U.S.C. §102(b) as being anticipated by Hawthorne et al. (U.S. Patent No. 6,008,991, hereinafter "Hawthorne").

The Examiner states in the Examiner's Answer:

"However, Hawthorne does not disclose "fig. 4 section line" and "break line" in the fig. 3 that is drawn up by Appellant as shown in page 15 of the Brief. And Hawthorne also does not teach series of cross-sectional profiles of "fig. A, fig. B, fig. C, fig. D, fig. E, fig. F and fig. G" for fig. 3 that is drawn up by Appellant in page 16 of the Brief. Hawthorne clearly teaches at col. 3, line 42-43 of description of drawing "Fig. 4 is a sectional side elevation of the package of Fig. 3. And, "sectional side view" is known in the art as a section view formed by a plane cutting through an object that is at right angle to an axis. Hawthorne teaches at figs. 3-4, the section view is formed in a plane cutting through plate 70 between standoff pins 74a/72a and 74b/72b having panel/channel 68 formed in the middle. Hawthorne et al. teaches at figure 4, the cross-sectional profile of a plate 70 is formed between pins 74a/72a to 74b/72b, and with panel/channel 68 formed between pins 74a/72a and 74b/72b. Hence, appellant's interpretation of Hawthorne reference is totally wrong."

Regarding claims 1-10 and 21-30, the Appellants respectfully traverse the rejection since the Appellants' claimed combination, as exemplified in claim 1, includes the limitation of the heat spreader not disclosed in Hawthorne of:

"a cross-sectional profile of the plate that is substantially constant along at least one horizontal direction that is perpendicular to the cross-sectional profile of the plate"

In Appellants' invention, a cross-sectional profile is defined to match the opening in a forming/extrusion tool for manufacturing the claimed plate. The subsequent cross-sectional profile is defined to be constant along the horizontal direction 202 (that the claimed plate is extruded). This cross-sectional profile is defined to be substantially constant rather than just constant in order to accommodate extrusion tool wear, which could cause the plate to become slightly larger as more plates were extruded. This is shown below in Appellant's FIG. 2:

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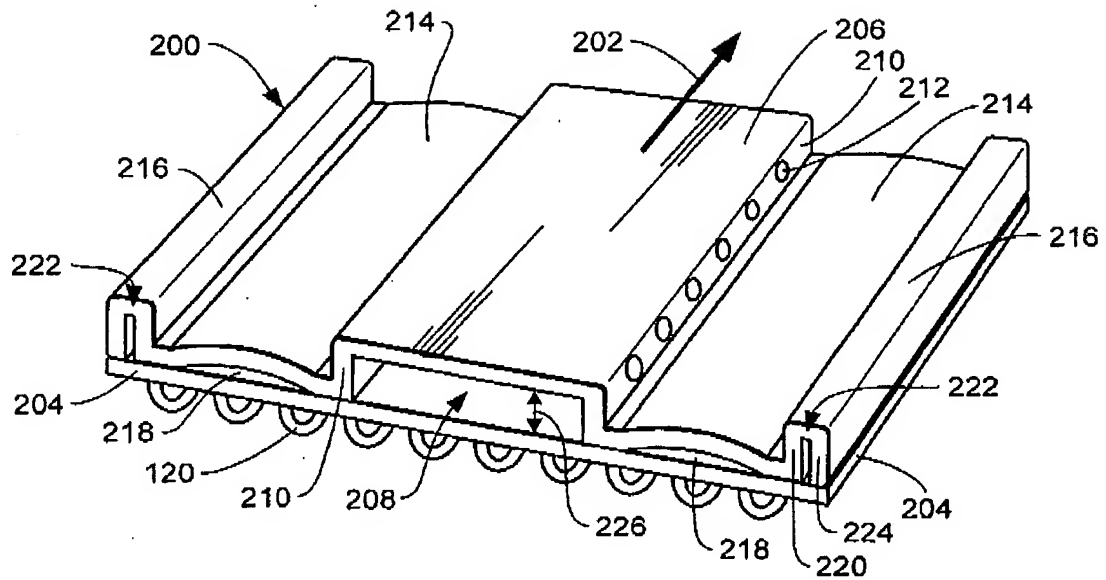
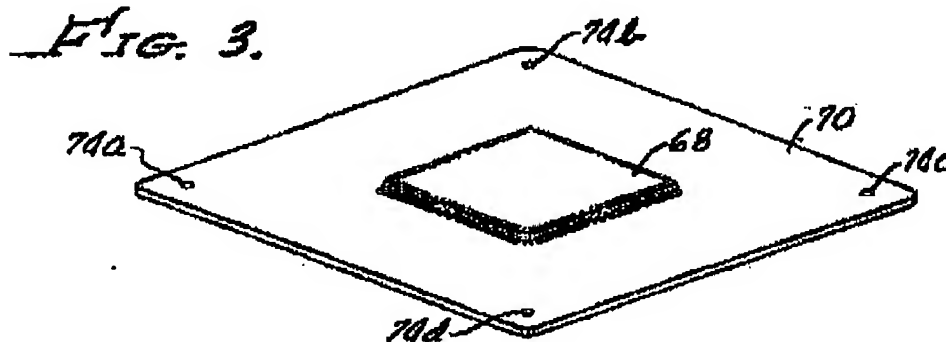


FIG. 2

The Examiner's argument is that a substantially constant cross-section along at least one horizontal direction that is perpendicular to the cross-sectional profile of the plate can be read on a structure that resembles a hat because the drawings are not-to-scale. However, this structure cannot be formed/extruded, as shown in Hawthorne FIG. 3:



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The forming/extrusion process of the present invention is disclosed in Specification page 6, line 16, through page 7, line 2:

“Referring now to FIG. 2, therein is shown a heat spreader 200 according to the present invention. ...the cross-sectional profile of the heat spreader 200 in one dimension (horizontally transversely as depicted in FIG. 2) is constant and does not change in the horizontal direction perpendicular thereto, depicted by an arrow 202. This provides for highly efficient and inexpensive fabrication of the heat spreader, such as by continuous metal forming and/or extruding operations. A large number of such heat spreaders can thus be formed in a single metal stamping, continuous metal forming, and/or extruding operation from a single, unitary piece of metallic material such as a metallic Cu sheet.

Heat spreaders, such as the heat spreader 200, that are thus formed in a single metal stamping, continuous metal forming, and/or extruding operation (“unitary metal forming”) will have characteristic physical properties in the final product that are a result of such unitary forming processes. Examples of such known physical characteristics from unitary metal forming operations include: surface scoring, surface hardness variations, bend stresses, inelastic deformations of the metal, and so forth. These physical characteristics can be easily determined and observed by known and conventional analytical techniques. As a consequence, heat spreaders according to the present invention that are formed in a single metal stamping and/or forming process will have the physical characteristics of being formed in a unitary metal forming process.”

It is respectfully submitted that a fundamental principle contained in 35 U.S.C. 112, second paragraph is that applicants are their own lexicographers. They can define in the claims what they regard as their invention essentially in whatever terms they choose so long as the terms are not used in ways that are contrary to accepted meanings in the art. As noted by the Court in *In re Swinehart*, 439 F.2d 210, 160 USPQ 226 (CCPA 1971), a claim may not be rejected solely because of the type of language used to define the subject matter for which patent protection is sought. However, it appears here that the term “substantially constant” is being used to refer to a not-to-scale drawing and to reject the claim despite an adequate disclosure of what is encompassed by the term.

It also respectfully submitted claims 1-10 and 21-30 are allowable under 35 U.S.C. §102(b) as not being anticipated by Hawthorne because that those having ordinary skill in the art would not read the claimed limitations on Hawthorne and because:

“[C]laims . . . are to be given their broadest reasonable interpretation consistent with the specification, and . . . claim language should be read in

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light of the specification as it would be interpreted by one of ordinary skill in the art." *In re Bond*, 910 F.2d 831, 833 (Fed. Cir. 1990); accord Bass, 314 F.3d at 577 ("[T]he PTO must apply the broadest reasonable meaning to the claim language, taking into account any definitions presented in the specification."), cited in *In re American Academy of Science Tech Center*, CAFC 03-1531, May 13, 2004.

Regarding claims 4 and 24, Appellants respectfully traverse the rejections since the Examiner's response for the first time is:

"Regarding claims 4 and 24, Appellant contends the "element 114 is a heat spreader, not an electromagnetic interference shield". This is not found persuasive because Hawthorne et al. clearly teach in figures 9-10 and col. 5, lines 20-23, heat spreader is made of metal. Since, electromagnetic wave inherently cannot go through the metal layer (see any basic physics textbook), hence, heat spreader 114/66 is inherently an electromagnetic interference shield to the channel (44/110). And, in view of page 6, lines 25-25 of Instant Specification/Invention, the heat spreader 200 is made of metal. Hence, there is no reason that Hawthorne's metal heat spreader cannot be an electromagnetic interference shield."

It is respectfully submitted that any basic physics textbook will also indicate that an electromagnetic wave can also be re-propagated or reflected by metal, and it is well known by those having ordinary skill in the art that an ungrounded piece of metal will not necessarily act as an electromagnetic interference shield. This is a major problem in the electronics industry despite metal chassis around electronic components. Appellants have claimed that the present invention is a Faraday cage in Specification page 8, lines 13-16, which discloses to those having ordinary skill in the art that the claimed shield is grounded.

Since Hawthorne does not disclose, teach, or suggest that the Hawthorne structure is an electromagnetic interference shield, it is respectfully submitted that claims 4 and 24 are allowable under 35 U.S.C. §102(b) as not being anticipated by Hawthorne because:

"As adapted to *ex parte* procedure, *Graham* [v. John Deere Co.] is interpreted as continuing to place the 'burden of proof on the Patent Office which requires it to produce the factual basis for its rejection of an application under sections 102 and 103.'" [insertion and underlining for clarity] *In re Piasecki*, 745 F.2d 1468, 223 USPQ 785, 788 (Fed. Cir. 1984), quoting *In re Warner*, 379 F.2d 1011, 154 USPQ 173, 177 (C.C.P.A. 1967), *cert. denied*, 389 U.S. 1057 (1968).

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Since the Examiner has produced no such factual basis, this rejection should be withdrawn.

Regarding claims 5, 10, 25 and 30, Applicants respectfully traverse the rejections since the Examiner's response for the first time is:

"Regarding claims 5, 10, 25 and 30. Appellant contends Hawthorne et al. does not teach an auxiliary heat spreader. This is not found persuasive because Hawthorne et al. clearly teach in figure 11 or 9-10, the auxiliary heat spreader (198, a housing 198 may **enclosed entire package**, see col. 9, lines 14-17, or 128 or 150, called shipping tray) is an integral auxiliary heat spreader formed on the heat spreader (114). And, in view of figure 5 of Instant invention, there is not seen any difference between Hawthorne's auxiliary heat spreader 198 (entirely enclosed, see col. 9, lines 14-17, fig. 11) formed on top of heat spreader 196/114 and Instant invention's auxiliary heat spreader (500) formed on heat spreader 210."

It is respectfully submitted that the Examiner has provided no showing that either the housing 198 or the shipping tray 128 or 150 are made of a heat spreader or conductive material. Further, the disclosure in Hawthorne does not allow such an assumption to be made.

Based on the above, it is respectfully submitted that that claims 5, 10, 25 and 30 are allowable under 35 U.S.C. §102(b) as not being anticipated by Hawthorne because:

"It is by now well settled that the burden of establishing a *prima facie* case of anticipation resides with the Patent and Trademark Office." *Ex parte Skinner*, 2 USPQ2d 1788, 1788-89 (B.P.A.I. 1986).

Since the Examiner has not met his/her burden, this rejection should be withdrawn.

The Examiner states for the first time without reference to claim numbers:

Appellant contends "Hawthorne makes no reference to forming attachment means selected from tabs, locking tabs, deformable sides, side ledges, side clips, clip bosses, center clips, side arms, and a combination thereof. This is not found persuasive because Hawthorne et al. clearly teach in figure 9-11, heat spreader (114), auxiliary heat spreader (198, a housing, or 128 or 150) forming attachment means selected from tab, locking tabs, deformable sides, side ledges, side clips, clip bosses, center clips, side arms (124/126/130/132/158/160, 194, 200, 202, 208, 212, 214, see figures 9-11)

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which is similar to the instant invention in figure 5, wherein the auxiliary heat spreader (500) forms on top of the heat spreader (210).

It is respectfully submitted that the claims relating to attachment means also require that they extend from respective channel walls of the unitary plate. The Examiner does not address these limitations and thus has failed to make a *prima facie* case per *In re Piasecki, supra*.

Regarding claims 7 and 27-28, Applicants respectfully traverse the rejections since the Examiner's response for the first time is:

"Regarding claims 7 and 27-28. Appellant contends Hawthorne et al. does not teach an auxiliary heat spreader. This is not found persuasive because Hawthorne et al. clearly teach in figure 11 or 9-10, the auxiliary heat spreader (198, a housing 198 may **enclosed entire package**, see col. 9, lines 14-17, or 128 or 150, called shipping tray) is an integral auxiliary heat spreader formed on the heat spreader (114). And, in view of figure 5 of Instant invention, there is not seen any difference between Hawthorne's auxiliary heat spreader 198 (entirely enclosed, see col. 9, lines 14-17, fig. 11) formed on top of heat spreader 196/114 and Instant invention's auxiliary heat spreader (500) formed on heat spreader 210."

It is respectfully submitted that the Examiner has repeated the rejection of claims 5, 10, 25 and 30. Based on the above, it is respectfully submitted that that claims 7 and 27-28 are allowable under 35 U.S.C. §102(b) for the same reason as give for claims 5, 10, 25, and 30 as not being anticipated by Hawthorne because of the holding in *Ex parte Skinner, supra*.

Regarding claims 8, 9, 21 and 29, it is respectfully submitted that the Examiner has repeated the rejection of claims 1-10 and 21-30. Based on the above, it is respectfully submitted that that claims 8, 9, 21 and 29 are allowable under 35 U.S.C. §102(b) for the same reason as give for claims 1-10 and 21-30 as not being anticipated by Hawthorne because of the holding in *In re Bond, supra*; accord Bass, supra, cited in *In re American Academy of Science Tech Center, supra*.

Based on all of the above, it is respectfully submitted that claims 1-10 and 21-30 are allowable under 35 U.S.C. §102(b) as being unanticipated by Hawthorne.

These rejections should accordingly be reversed.

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Conclusion and Relief Requested:

With respect to the issue presented in this appeal as set forth above in section (6), the Appellants hereby solicit a ruling that:

(a) Claims 1-10 and 21-30 were improperly rejected under 35 U.S.C. §102(b) as being anticipated by Hawthorne. This rejection should be reversed.

(b) Claims 1-10 and 21-30 are patentable over the prior art.

Reversal of the Examiner's decision is respectfully requested.

To the extent necessary, a petition for an extension of time under 37 C.F.R. 1.136 is hereby made. Please charge any shortage in fees due in connection with the filing of this paper, including any extension of time fees, to Deposit Account No. 50-0374 and please credit any excess fees to such deposit account.

Respectfully submitted,



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